

Please add claims 6-8 as follows:

--6. (New) A water electrolytic apparatus according to claim 1, wherein each of said water electrolytic cells is laminated.

92 7. (New) A water electrolytic apparatus according to claim 1, wherein each cathode is plate shaped.

8. (New) A water electrolytic apparatus according to claim 1, wherein each anode is plate shaped.--

REMARKS

Claims 1-8 are pending. By this Amendment, claim 1 is amended and claims 6-8 are added. No new matter is presented.

Claims 1-5 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,667,647 to Suga et al. (hereinafter "Suga") in view of U.S. Patent No. 4,243,508 to Dankese. Applicants respectfully traverse this rejection.

Pending claim 1 recites a water electrolytic apparatus including a plurality of water electrolytic cells, each cell has a solid polymer electrolyte membrane, an anode, and a cathode. The anode and the cathode are arranged on opposite sides of the electrolyte membrane, respectively. The water electrolytic cells are developed on a hypothetical plane and electrically connected in series to one another, wherein each of the water electrolytic cell, solid polymer electrolytic membrane, anode, and cathode are developed on respective hypothetical planes that extend parallel to one another.

As noted above, pending claim 1 recites each water electrolytic cell has a solid polymer electrolyte membrane. The solid polymer electrolyte membrane is used to facilitate the transfer of protons. The Office Action admits that Suga does not disclose such a solid polymer electrolyte membrane.

To overcome this deficiency in the Suga disclosure, the Office Action takes the position that the use of solid-polymeric membranes are well known in the art as taught by Dankese. See column 1, lines 13-21 of Dankese. Therefore, the Office Action argues it would have been obvious to one of ordinary skill in the art to modify the Suga electrolytic gas generation apparatus to have a solid-polymeric membrane as taught by Dankese so as to improve the overall efficiency of the Suga apparatus.

Applicants acknowledge that Dankese discloses the use of solid-polymeric membranes being well known in the art. See column 1, lines 13-21 of Dankese. However, Suga specifically and repeatedly discloses the interior surface area 2 of the box-walled structures, including the framework 4, is coated with metal. See column 1, lines 42-43 and 60-61; column 2, lines 57-59; column 3, lines 40-42; column 5, lines 23-24; and the abstract of Suga. Furthermore, in the section of the Suga patent outlining the benefits provided by the structural arrangement of the Suga apparatus, Suga explains that the interior surface is coated with metal to constitute an electrode and lower the electrical resistance of the structure. See column 4, line 62+. Accordingly, the voltage between the positive and negative electrodes of the Suga apparatus is lowered, thereby improving the overall electrolytic efficiency of the electrolysis operation of the Suga apparatus. See column 5, lines 23-28.

Therefore, Applicants respectfully submit that one of ordinary skill in the art would not be motivated to combine the applied teachings of Suga and Dankese because to do so would be contrary to the specific disclosure of Suga. /

Furthermore, Applicants also submit that the suggestion or motivation to make the proposed modification of the Suga apparatus is not present. In particular, changing the interior surface of the Suga apparatus to be a polymer rather than metal would render the modified Suga apparatus unsatisfactory for its intended purpose as the interior surface would not be able to perform as an electrode as required. In other words, the teachings of Suga and Dankese are not sufficient to render the rejected claims obvious since the proposed modification or combination would change the principle of operation of the Suga apparatus. See M.P.E.P. § 2143.01.

Additionally, it appears as if the Office Action is applying improper hindsight reasoning as the basis for this rejection. In other words, the Office Action is merely piecing together the applied art onto the Applicants' patent application so as to deny patentability of the application, which is the essence of hindsight reasoning and is a wholly improper basis for rejecting patentability.

Furthermore, due to the recited structure of the solid polymer electrolytic membrane, the anode and the cathode in each water electrolytic cell is developed on respective hypothetical planes that extend parallel to one another, the thickness or height of the water electrolytic cell in a direction that is perpendicular to the hypothetical planes can be made quite small, thereby making the thickness of the entire water electrolytic apparatus rather small.

Suga and Dankese to not disclose such a feature nor derive the inherent benefits provided therefrom.

Suga discloses the entire device shown in Figure 1 is called an electrolytic cell and a pair of box structures 1, 1 on opposite side of the ion exchange film 3 are positive, i.e., a negative pole. When the box structures 1, 1 should correspond in function to the recited anode or cathode of pending claim 1, Applicants respectfully assert that the box structures 1, 1 and films 3 are not thought to be developed on respective hypothetical planes that extend parallel to one another.

For the above provided reasons, Applicants respectfully submit that pending claim 1 is not rendered obvious by Suga and Dankese as the applied references do not teach each feature of rejected claim 1. therefore, claim 1 should be deemed allowable.

Claims 2-8 depend from claim 1. It is respectfully submitted that these dependent claims should be deemed allowable for the same reasons claim 1 is allowable, as well as for the additional subject matter recited therein.

Withdrawal of this rejection is respectfully requested.

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejections, allowance of claims 1-8, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

U.S. Patent Application Serial Number 09/804,083
Attorney Docket Number 107348-00096

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing docket number 107348-00096.**

Respectfully submitted,
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Enclosure: Marked Up Version of Amended Claim 1

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Marked Up Version of Amended Claim 1

IN THE CLAIMS:

Please amend claim 1 as follows:

1. (Amended) A water electrolytic apparatus comprising a plurality of water electrolytic cells each having a solid polymer electrolyte membrane, an anode, and a cathode, the anode and the cathode being arranged on opposite sides of said electrolyte membrane, respectively, said water electrolytic cells being developed on a hypothetical plane and electrically connected in series to one another, wherein each of said water electrolytic cell, said solid polymer electrolytic membrane, said anode, and said cathode are developed on respective hypothetical planes that extend parallel to one another.